REMARKS/ARGUMENTS

The present application includes claims 1-3 and 5-20. By this response, independent claims 1, 10 and 18 have been amended. The Applicants respectfully submit that no new matter has been added by this amendment

The Office Action rejected claims 1-3 and 5-20 under 35 U.S.C. §103(a) over Jensen et al (US 6,666,579) ("Jensen") in view of Ryals et al (US 5,431,161) ("Ryals").

Amended Claims

Independent claims 1, 10, and 18 have been amended to recite, in various forms, that the sequential image by image presentation of the 2D images creates 3D information of the orientation and position of an instrument through the motion of the 2D images through the animation process. Support for these amendments can be found in at least paragraph 0023 and 0024 of the published application No. US 2005/0169510. No new matter has been added. As opposed to items shown in cited art, the recited static images are continuously set in motion to create a naturally occurring 3D image through moving the frames of the plurality of 2D images creating motion through animation. Such systems and methods are not found in the cited art, as explained below, and, thus, for at least these reasons, claims 1-3, 5-20, should be allowable.

Claim Rejections – 35 U.S.C. § 103

The Office Action rejected claims 1-3 and 5-20 under 35 U.S.C. §103(a) over Jensen et al (US 6,666,579) ("Jensen") in view of Ryals et al (US 5,431,161) ("Ryals).

Turning to independent claim 1, the Office Action alleges that Jensen discloses instrument tracking on a computer and quotes a limitation of claim "automatically displaying on an output device each image in said collected plurality of static images in an image by image

manner-to create motion through the animation process, wherein said at least one position and orientation of said at least one instrument is projected on each said image." The Office Action then quotes the following passage from Jensen to support that Jensen discloses the above limitation of claim 1: "The display graphics processor 295 accesses the slice data set memory 290 to display the image slices on the display 250. The display graphics processor 295 also constructs graphical representations of the instrument or tool 24 and overlays the instrument graphic with the image slices on the display 250. The display graphics processor 295 may present multiple two-dimensional image slices simultaneously on the display 250 with instrument graphics superimposed upon each image slice, col 10, lines 25-50."

In Jensen, the display graphics processor 295 constructs graphical representations of the instrument, while in the present claim1, the position and orientation of the instrument is projected onto each image. Therefore, Jensen does not teach projecting on the image the 3D information of the orientation and position of the instrument but rather Jensen creates a graphical representation.

Further, Applicants respectfully submits, and the Office Action admits, that Jensen does not teach, that suggest or disclose the technology in the presently amended claim 1 of collecting a plurality of static 2D images in sequential image by image manner to create 3D information of said position and orientation of said instrument by creating motion through the animation process, wherein said at least one position and orientation of said at least one instrument is projected on each said image.

Further, Ryals does not cure the deficiencies of Jensen. Nowhere does Ryals teach, disclose or suggest animation of 2D static images to create 3D information of the instrument's position and/or orientation. Office Action admits Jensen does not "specifically teach collected

plurality of static images in sequential image by image manner to create motion through the animation process, wherein said at least one position and orientation of said at least one instrument is projected on each said image." Applicant submits that Ryals also fails to specifically teach this admitted shortcoming of Jensen. The Office Action states that in Ryals the post acquisition computer may display the data in either two formats: (1) cine (animate) the data in gated fashion per projection angle or (2) cine all projection images for a gated segment. quotes two passages from Ryals. However, Ryals does not teach, disclose or suggest the technology in currently amended claim 1 of collecting plurality of static <u>2D</u> images in sequential image by image manner to create <u>3D information of said position and orientation of said instrument by creating</u> motion through the animation process, wherein said at least one position and orientation of said at least one instrument is projected on each said image. In Ryals, as the Office Action points out, the Post Acquisition Processor acquires raw gated SPECT data generated from camera system 10 and using configurable procedures, reconstructs (performs tomography of back projects) the data to provide reconstructed volume and from the volume generates specialized images. Thus, Ryals does not collect a plurality of 2D images in sequential image by image manner, but rather computes and reconstructs the data.

Further, Ryals defines terms such as "processing" or "computing" or "calculating" or "determining" or "displaying" or the like, refer to the action and processes of a computer system, or similar electronic computing device, that manipulates and transforms data represented as physical (electronic) quantities within the computer system's registers and memories into other data similarly represented as physical quantities within the computer system memories or registers or other such information storage, transmission or display devices. (Ryals, col. 8, lns 33-43). Unlike the technology in the present amended claim 1 of collecting a plurality of static

2D images in sequential image by image manner to create 3D information of said position and orientation of said instrument by creating motion through the animation process, wherein said at least one position and orientation of said at least one instrument is projected on each said image, Ryals uses a computer calculated image to create 3D images. In Ryals, a 3D screen processing block 920 which allows a user to create 3D images. In Ryals, "FIG. 11 of Ryals illustrates the features of the 3D screen processing block 920 (action and processes of a computer system) of the present invention as displayed on the 3D screen of computer display 105. (Ryals, col 36, lns. 60-63). Unlike the present technology of amended claim 1, in Ryals, the 3D image is a computed image.

Unlike the technology in the present amended claim 1, Applicants respectfully submit that Ryals does not disclose, teach or suggest collecting a plurality of static 2D images in sequential image by image manner to create 3D information of said position and orientation of said instrument by creating motion through the animation process, wherein said at least one position and orientation of said at least one instrument is projected on each said image. Rather, unlike the present technology which uses scrolling the images to enable the user to understand the instrument information in 3D, Ryals, like Jensen, uses a computer processor to create a 3D image and uses a computer to construct images.

Thus, neither Jensen, as admitted by the Office Action, nor Ryals disclose the recited feature of automatically displaying on an output device each image in said collected plurality of static images in a sequential image by image manner to create 3D information of the position and orientation of an instrument by creating motion through the animation process.

Further, Applicants respectfully submit that the combination of Jensen and Ryals would not make the claimed invention obvious to one of ordinary skill in the art at the time of the

invention. The Office Action provides no rationale for its conclusionary statement that with the combination of Jensen and Ryals, neither of which disclose the feature of creating the instrument position and/or orientation information in 3D by scrolling 2D images in sequential image by image manner to create 3D information of said instrument by creating motion through the animation process, would be obvious to one of ordinary skill in the art. As stated in the Application "Previous designs have used static, non-animated data to accomplish transfer [the position and/or orientation of a surgical instrument to the user] in a method that requires substantial learned skill." Applicants submit that animating 2D data so that the human may perceive 3D information of a surgical instrument is not obvious as all previous designs have used static non-animated data to accomplish the task.

For at least the reasons stated above, Applicants submit that neither Jensen nor Ryals, taken alone or in theoretical combination, teaches or reasonably suggests all the limitations of amended claim 1. Applicants respectfully submit that currently amended independent claim 1 is in condition for allowance.

Claims 2-3 and 5-9 ultimately depend from claim 1 and should be allowable at least for the reasons stated.

Turning next to independent claim 10, the Office Action alleges that "the limitation of claim 10 has been addressed above except the following "automatically repeating said selecting, computing, projecting, and displaying steps to create an animation using a sequential image by image presentation through said series of 2D static images." The Office Action also alleges that Ryals teaches this limitation and states that Ryals teaches as a single object, the post acquisition computer may display the data in either of two formats: (1) cine (animate) the data in gated fashion per projection angle or (2) cine all projection images for a gated segment

As presented above, nowhere does Ryals teach, suggest or disclose automatically repeating said selecting, computing, projecting, and displaying steps to create 3D information of said position and orientation of said instrument by creating motion through the animation process using a sequential image by image presentation through said series of 2D static images as claimed in amended claim 10 of the instant application. As stated above, rather than using sequential image by image presentation of 2D images to create 3D information in the technology in the presently amended claim 10, Ryals uses a computer calculated image to create 3D images. In Ryals, a 3D screen processing block 920 allows a user to create 3D images. In Ryals, "FIG. 11 illustrates the features of the 3D screen processing block 920 (action and processes of a computer system) of the present invention as displayed on the 3D screen of computer display 105. (Ryals, col 36, lns. 60-63). Unlike the present technology of amended claim 10, in Ryals, the 3D image is a computed image.

Further, Applicants respectfully submit that the combination of Jensen and Ryals would not make the claimed invention obvious to one of ordinary skill in the art at the time of the invention. The Office Action provides no rationale for its conclusionary statement that with the combination of Jensen and Ryals, neither of which disclose the feature of automatically repeating said selecting, computing, projecting, and displaying steps to create 3D information of said position and orientation of said instrument by creating motion through the animation process using a sequential image by image presentation through said series of 2D static images, would be obvious to one of ordinary skill in the art..

Thus, for at least this reason, Applicants submit that neither Jensen nor Ryals, taken alone or in theoretical combination, teaches or reasonably suggests all the limitations of currently

amended claim 10. Applicant respectfully submits that currently amended independent claim 10 is in condition for allowance.

Claims 11-17 ultimately depend from claim 10 and should be allowable at least for the reasons stated.

Regarding independent claim 18, the Office Action alleges simply that independent claim 18 has been addressed. Applicants respectfully point out that, as presented above, neither Jensen nor Ryals teach, disclose or suggest creating 3D information by creating_motion through the animation process by automatically and continuously presenting an image by image animation_of said series of static images including at least one of a position and orientation of at least one instrument and at least one image of said at least one instrument located at said at least one of a position and orientation. Rather, as presented above, Ryals discloses that 3-D images are constructed using a computer to create 3D images. Ryals discloses "FIG. 11 illustrates the features of the 3D screen processing block 920 (action and processes of a computer system) of the present invention as displayed on the 3D screen of computer display 105. (Ryals, col 36, lns. 60-63). Unlike the present technology of amended claim 18, in Ryals, the 3D image is a computed image.

Further, the Applicants respectfully submit, and the Office Action provides no rationale, that the combination of Jensen and Ryals would make the claimed invention obvious to one of ordinary skill in the art at the time of the invention. Applicants submit that animating 2D data so that the human may perceive 3D information of a surgical instrument is not obvious as all previous designs have use static non-animated data to accomplish the task. Thus, for at least these reasons, Applicants submit that neither Jensen nor Ryals, taken alone or in theoretical combination, teaches or reasonably suggests all the limitations of claim 18. Applicant respectfully submits independent claim 18 is in condition for allowance.

Claims 19-20 ultimately depend from claim 18 and should be allowable at least for the reasons stated.

As claims stand amended, Applicants respectfully submit, that Jensen does not teach the claimed features of independent claims 1, 10, and 18. Further, the Applicants respectfully submit that the combination of Jensen and Ryals would not make the claimed invention obvious to one of ordinary skill in the art at the time of the invention.

Claims 2-3, 5-9; 11-17; and 19-20 depend from independent claims 1, 10, and 18, respectively. The Applicants respectfully submit that as claims 1, 10, and 18 should be allowed for at least the reasons discussed above, claims 2-3, 5-9, 11-17, and 19-20 should also be allowed.

CONCLUSION

In general, the Office Action makes various statements regarding the pending claims and the cited references that are now moot in light of the above. Thus, the Applicants will not address such statements at the present time. However, the Applicants expressly reserve the right to challenge such statements in the future should the need arise (e.g., if such statement should become relevant by appearing in a rejection of any current or future claim).

In view of the above remarks, Applicants respectfully submit that claims 1-3 and 5-20 now pending in the application contain patentably distinct subject matter over all the references of record and are in condition for allowance. Applicants, therefore respectfully request consideration of the pending claims and a finding of their allowability. A notice to this effect is respectfully requested. Please feel free to contact the undersigned should any questions arise with respect to this case that may be addressed by telephone.

The Commissioner is authorized to charge any additional fees or credit overpayment to the Deposit Account of GTC, Account No. 070845.

Respectfully submitted,

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